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# PITURI AND TOBACCO.

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Seed  
*natural size*

Duboisia Pitturi, Bancroft.

Stamens





THE Philosophical Society of Queensland herewith transmits to you a short history of Pituri and the allied plants. Pituri grows in Central Australia: it is chewed by the aborigines, who trade with it far and wide. It has recently been analysed, and found to have similar properties to Tobaceo. No plants of it are under cultivation in Australian gardens. The other members of the genus *Anthocercis* widely scattered over Australia are desirable for examination. It is hoped you or your friends may be able to forward to this Society ripe seeds of some of these plants; also, small quantities of the dried herb—one ounce, more or less, by post.


I have the honour to be,

Your obedient servant,

A. C. GREGORY,

President.

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## PITURI AND TOBACCO.

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(Read before the Queensland Philosophical Society, by Joseph Bancroft, M.D.,  
September 4th, 1879.)

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IN March of 1872 I had the honour of reading before this Society an account of the first experiments made with the Pituri of our aborigines. I was so startled by the toxic energy of the substance that my paper was headed "The Pituri Poison." The details of that paper I need not now recount. For five years afterwards no clue could be found to ascertain what plant produced the Pituri that the Central Australian man held in such high estimation, though Mr. Bailey, our botanist, and Baron von Mueller, were put frequently on the rack by my inquiries and specimens transmitted. The plants, however, which Hodgkinson, the explorer, collected in 1877 were not ground into particles, as is the condition of the Pituri procured from the natives. So, after I had ascertained that these specimens had the same poisonous properties as the natives' Pituri, they were forwarded by Mr. Bailey to Baron von Mueller, who at last was able to clear up the mystery and tell us that the plant was *Anthocercis* or *Duboisia Hopwoodii*. The learned Baron's suggestion for me to examine *Duboisia myoporoides* led to the discovery of that curious mydriatic now establishing itself as a potent remedy in Ophthalmic practice in Europe.

My second paper on "Pituri and Duboisia" relates these interesting circumstances; but now with regard to Pituri some information has recently come to hand which it is the object of this paper to detail.

On my trip to Europe lately I submitted the Pituri to Professor Fraser, of Edinburgh, the discoverer of the mydriatic property of Calabar-bean; later on I gave specimens to Dr. Sydney Ringer, the author of the celebrated hand-book on therapeutics; and to the eminent Parisian chemist, Mons. Petit.

The results of the experiments of Professor Fraser are not yet to hand; Dr. Ringer's article in the *Journal of Physiology* is commented on in the *Lancet* of December 21st, 1878. (The original paper I have not been able to get.) And Mons. Petit



nas given in the *Pharmaceutical Journal* of April 5th, 1879, an account of his findings, from which the following is extracted:—

Last year, Dr. Ringer having received a very small quantity of pituri, handed it, for the purpose of medical examination, to Mr. Gerrard. Mr. Gerrard recognised that pituri contained an alkaloid, and notwithstanding the small quantity at his disposal he has been able to determine some of the properties of this product, to which he has given the name "piturine." Dr. Baucroft having sent to me, through Messrs. Christy and Co., of London, a larger supply of pituri—about fifty grams—I have been able to take up and complete the experiments of Mr. Gerrard.

The aqueous extract dissolved in water was treated with bicarbonate of potash and ether. The ether was freely alkaline; agitated with water to which dilute sulphuric acid was gradually added, it gave up the alkaloid to the aqueous solution. Several treatments with ether are necessary to exhaust the aqueous extract. The water, containing in solution the sulphate of the alkaloid, was separated and treated afresh with the bicarbonate and ether. After three treatments there was obtained by evaporation of the ether a scarcely coloured residue, possessing energetic alkaline properties and presenting all the reactions of the better defined alkaloids. It gave off an irritating odour, especially when heated slightly, and was very pungent to the tongue. Upon bringing strong hydrochloric acid close to the surface of the liquid, dense fumes were formed. Placed in a watch glass upon a water-bath, it volatilized rapidly. It was therefore a *volatile alkaloid*.

The properties above described raised the inquiry whether the alkaloid was not nicotine. Some pure nicotine was therefore procured, and various comparative experiments have been made with the two substances.

In order to remove any water which the alkaloid derived from pituri might contain, after careful evaporation, it was left during forty-eight hours in a vacuum over sulphuric acid. Under these conditions nicotine and the alkaloid from pituri gave exactly the same result. Only having at my disposal about 1.5 gram of alkaloid, I was unable to take its boiling point.

*Rotatory Power*.—0.236 gram dissolved in 10 c.c. of 98° alcohol gave with the polarimeter 5.85° with a column of 20 centimetres, being for the yellow light a rotatory power of  $-123.9^{\circ}$ , whilst the rotatory power of nicotine is, according to Buignet,  $-121.9^{\circ}$ . When saturated with sulphuric acid the rotatory power of pituri passes to the right, as in the case of nicotine.

*Alkalimetric Power*.—2 c.c. of the preceding solution were saturated with titrated sulphuric acid. The results calculated to 10 c.c. gave: 1st experiment, 0.07 gram  $H_2SO_4$ ; 2nd experiment, 0.0725 gram  $H_2SO_4$ . These figures calculated as for nicotine gave 0.2312 gram and 0.2396 gram, or a mean of 0.2359 gram, a figure practically equal to the amount of alkaloid employed.

*Chloroplatinate*.—Dissolved in water and saturated with hydrochloric acid in slight excess, the alkaloid of pituri gave upon addition of chloride of platinum exactly the same crystals as those of the



chloroplatinate of nicotine; that is to say, in dilute solution, flattened prisms with parallelogram base. This chloroplatinate, which is represented by the formula  $C_{10}H_{14}N_2 \cdot 2HClPtCl_2$ , having been dried at  $115^\circ C.$  during four hours, gave upon analysis—platinum, 34 per cent.; chlorine, 36 per cent. The calculated number for chloroplatinate of nicotine are—platinum, 34.4 per cent.; chlorine, 37 per cent.

The other reactions are absolutely the same as for nicotine. I would mention, however, particularly that relative to the formation of iodo-nicotine. Upon mixing together ethereal solutions of iodine and of the pituri alkaloid very fine crystals similar to those of iodo-nicotine are rapidly formed.

The alkaloid prepared by Mr. Gerrard has been experimented with in London by two able physiologists, Messrs. Sidney Ringer and Murrell. The phenomena observed confirmed in an evident manner those described by Claude Bernard in his memoir on Nicotine: \* augmentation of the number of the respirations, which became painful and diaphragmatic, an unsteady gait, convulsive contraction of the muscles, rigidity of the limbs, and all there described. A remarkable circumstance is mentioned by all three observers: the animal appears blind and the eyeball seems to be reversed so that the pupil cannot be seen. But in examining this phenomenon more closely Claude Bernard had observed, before Ringer and Murrell, that it was due to tension.

The alkaloid of pituri is therefore nicotine.

M. Petit, in thus announcing the identity of piturine with nicotine, gave me a great surprise. Some comparative experiments I have just made on animals with extract of Pituri and Tobacco go far to confirm the view of M. Petit. The Pituri extract is, however, very much stronger than Tobacco extract; pure nicotine I am unable to get in the colony. The remarkable contraction of the ocular muscles in the case of dogs suffering from Pituri was observed by me and recorded at page 12 of my paper on Pituri and Duboisia as follows:—"The extreme retraction of the eye-ball in dogs is very remarkable." There is no mention of this effect in the ordinary medical works as produced by Tobacco, though it appears to be recorded in Bernard's paper quoted by Petit, a copy of which I have not seen. I would suggest to experimentalists in Europe to make further observations on this phenomenon, and inquire if the alkaloids that resemble nicotine have any similar action on the eyes of dogs. After injecting a large dose of Pituri a dog's eyes are lost to sight, only duplicatures of the conjunction being visible. The dog may be quite sensible, wag his tail, and follow the sound of the voice, but the eyes remain quite buried in the orbit by the same muscular retraction one sees at any time when an attempt is made to touch the eyes of these animals.

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\* *Lçons sur les Substances toxiques et mdicamenteuses.*

I hope some future day to give a comparative account of the phenomena produced by piturine and nicotine. At present very little Pituri can be got, and the plant is not under cultivation. The nearest place we know it grows—Eyre's Creek—is 800 miles from here in a straight line. Hodgkinson's Pituri was gathered on the Queensland border, latitude  $22^{\circ} 52' 51''$ , longitude  $138^{\circ}$ .

In many parts of the interior, from Cooper's Creek to the Gulf of Carpentaria, the Pituri grows, and several persons engaged in establishing new stations in the Western country hear it spoken of by the aborigines, but very few know the tree, as the natives avoid giving any information about it. A letter about Pituri, published in the *Queenslander* recently, is so interesting that I quote it here in full:—

PITURIA.—We are indebted to Mr. Sylvester Brown for the following very interesting paper, which has been a long time in reaching us, being dated "Sandringham, Sylvester Creek, 10th December," and having only just come to hand:—

Pituri-land is so little known that perhaps a short description of the shrub, its locale, and manner of growth may prove interesting. I am moved to this from perusing in a recent *Queenslander* (dated October 19) that Dr. Bancroft, of Brisbane, has lately read a paper on the subject at a meeting of the Queensland Philosophical Society.

I have during the last few months passed several times through the belt of country in which pituri has hitherto only been found. It is situated, so far as my means of observation serve, with the 138th meridian of east longitude passing through the belt about the middle, and I have met with the shrub anywhere in the vicinity of the longitude mentioned between the 23rd and 24th parallel south latitude, with a depth of fifty miles east and west. The pituri shrub, when full grown, is about 8 feet high, and the wood at the thickest part of the stem is up to 6 inches in diameter. When freshly cut the wood has a decided smell of vanille. It is very light and close-grained; colour, lemon. Dr. Bancroft's guess as to the seed is so far correct that the berry (which, when ripe, is black and like a small black currant) has inside very minute kidney-shaped seeds. I have secured some of the seed, picked by myself from the growing tree, and hope, when passing through Brisbane, to let Dr. Bancroft have an opportunity of continuing his investigation of this rare plant by endeavouring to grow some of it. I have also cut some samples of the wood which I shall bring down unless absorbed, specimens and all, by early floods *en route*. I formerly heard many wonderful accounts of the rarity of pituri, and the great difficulty of procuring it. These absurd reports were strengthened by the extreme value placed on it by inside blacks, who could only obtain it by barter. "It grew on a rocky mountain in the Stony Desert, jealously guarded by the owners of the soil, who, in their periodical trips to obtain a supply, would have to carry three days' water in coolimans and paddymelon-skin waterbags." I also heard that it "grew only on a small extent of ground not exceeding twenty square miles;" whereas the fact is that it grows on the ridges of high spinifex sandhills, and

which sandhills contain many cool springs and lakes, which will hold water much better than the fabulous stories told of pituri.

There is one beautiful lagoon, with two smaller ones, just about the South Australian border, on or about the 23rd parallel of latitude, which—the blacks averring that it had never before been visited by white men, or “Pirri-birri,” as they call them here—I took the liberty of naming “Pituria lagoons.” The water in these lagoons is beautifully clear and soft, and when full they will last nearly, if not quite, two years. Pituri grows on the sandhills round them. Should the Government wish to make a pituri reserve, here is the place for it. The country in the vicinity is of no use for pastoral purposes, so a reserve of about twenty miles square, or 400 square miles, would be a cheap concession.

The blacks break off the pituri boughs and tie them up in netting till dry; then when thoroughly dry they break the leaves up and enclose them in closely netted bags in the shape of a crescent. These are easily carried for the purpose of barter, which is carried on as far as Cooper's Creek and the Barcoo. Before chewing they burn the leaves of a shrub they call “montera,” and moistening the ashes mix and chew. I have not noticed any abnormal result from the habit, though I have heard that a black unaccustomed to the weed becomes intoxicated thereby. I have some young plants in a box, which, if they grow, I shall endeavour to bring down, but, as they have a journey of 1,000 miles before them overland, the result is more than problematical, even should they elect to grow in the box. I am rearing one plant, which seems to be growing well, in my garden at the station. The seeds, however, may grow, and to facilitate selection of a proper soil I shall bring down a sample of mother sand for analysis. The suckers grow from long rough roots, which run about under the sand and throw up shoots as they go.

I have to thank Mr. Brown for some ounces of carefully dried Pituri in flower, from which the drawing herewith was made. The seeds did not germinate, though cared for most diligently: they were probably immature. The berries of the Pituri bush most likely fall off directly they ripen, as I find to be the case with *D. myoporoides*.

Mr. Wiltshire kindly forwarded me the following on Pituri and smoking:—

For many years I have by hearsay been acquainted with the properties of pituri. In South Australia, in the neighbourhood of Lake Hope, the natives procure it from other natives making their annual visit South for the red ochre so valued by them. On questioning the visiting natives, who have all the marks of long travel, as to where pituri grows, I found them wonderfully reticent, the only answer I received being an indication by a motion of the hand in a Northerly direction and a rattling noise made in the throat intended to signify that it was a long way from there. It is much sought after by the natives, who will give anything they possess for it—not for the purpose of exciting their courage or of working them up to fighting pitch, but to produce a voluptuous dreamy sensation. I have heard of pituri producing a fierce excitement, but I have never seen it, as far North as I have been. It may be that there are other



plants that will produce the latter effect, but I have never seen or heard of them. Going into the interior from the coast about  $16^{\circ}$  or  $17^{\circ}$  south, you will meet natives whose "possible sacks" or "dilly-bags" contain frequently pituri or something very like it. On making them understand that you wish to know where it grows, they will point southwards and say "tir-r-r-r-r," meaning a long way. This, I am inclined to think, is the same plant as is used by their countrymen in the South.

Pituri is valued at as high a rate in the North as in the South, and eared for accordingly. In the north it is not unusual to find a description of mild tobacco in the dilly-bags of the natives along with a pipe or pipes—one kind being not unlike a cigar-tube made by the *Toredo navalis* in perforating the roots of the mangroves, destroying the root and leaving a shelly crust behind it; but as this description can only be procured on salt water, natives in the interior make a rude pipe of a soft stone, the tube usually very short, of a pithy wood or a joint of a reed. I think it very likely that the natives have acquired this habit from Europeans, as we know that the "Beagle" was at anchor in the Victoria River for some months, thirty years ago, and it is possible that the crew communicated with the natives, as they had plenty of time and opportunities. Such a novelty as smoking would be sure to find adopters among the tribes in the vicinity. As for tobacco, they would naturally, after exhausting their small supply, try the plants around, till one was found with the necessary qualities. The pituri proper, I am inclined to think, grows between the latitudes of  $21^{\circ}$  to  $29^{\circ}$  south, in poor and sandy soil.

There were other novelties in the dilly-bags of the natives at times which we did not understand and the owners would not, in a few cases explain, as they persistently kept out of sight.

In the *Lancet* of January 18, 1879, a letter from Dr. Murray appeared, and I have his liberty to use it in any paper I may write on the subject:—

Seeing a notice of pituri in your journal of December 21st, 1878, I at once recognised an old friend about which I picked up a few interesting facts while travelling many years ago in Central Australia.

First, with regard to name: "pituri" appears intended, but fails, to convey the native sound of the word. Howitt, the able leader of our party, who spoke the Cooper's Creek dialect fairly well, always spelt it "pitchery," which conveys the true sound, the accent being placed upon the antepenult "pitch," as in almost all trisyllabic words of this language. "Pitch'ery," therefore, or the more modern form, "pitchiri," is correct if it be desirable to maintain the native pronunciation of such words.

This substance was apparently unknown in 1862 (the year of Howitt's expedition) to natives south of the drainage line of Cooper's Creek, which trends S.W. from its sources in the dividing ranges of Queensland (lat.  $23^{\circ}$ , long.  $145^{\circ}$  about) to its terminal expansion and desiccation in South Australia (lat.  $30^{\circ}$ , long.  $137^{\circ}$  about). It is probable that its use formerly extended south of this boundary, and that it receded before the white man's tobacco, now the chief luxury and current coin amongst the blacks of the out settlements. We often questioned the Cooper's Creek natives as to where they got

their pitchiri, and they invariably pointed northward as the quarter it came from, using at the same time the words "tooch, tooch," "far away, far away." Howitt discovered that they traded regularly for it with the natives beyond Sturt's stony desert, and he found it convenient, on account of water, to follow their trading track in one of his exploration trips from our depôt, or Cooper's Creek, to Wills' Creek beyond the desert (from about lat.  $27^{\circ} 50'$ , long.  $141^{\circ} 5'$ , to lat.  $25^{\circ} 48'$ , long.  $130^{\circ} 30'$ ). Referring to this journey, he says, in a despatch from Angipena, South Australia, dated September 2nd, 1862:—"The track I followed across the desert is one made use of by the natives of Lake Hope, Cooper's Creek, and Kyejeron on their journeys to procure the *pitcheri*, so much used by them as a narcotic, and on this account I conclude that it is the shortest route known to them." It is, I think, quite certain that this plant does not grow on Cooper's Creek, else the natives would possess it more abundantly, and would have pointed it out to us when so frequently questioned on the subject. Thus they made no secret of showing us their *nardoo*, *papa*, and *bowa* seeds, nor objected to inform us about their edible fruits, herbs, roots, and ground-nuts, although one would naturally expect them to be jealously watchful of every onnee of food in so inhospitable a country. Pitchiri, in short, was so scarce amongst the Cooper's Creek tribes that they parted with only small quantities in barter for wax matches, which was our golden currency. The men carried it in small skin bags tied round their necks or under the axillæ, but I never noticed the women with any. They never travel without it on their long marches, using it constantly to deaden the cravings of hunger and support them under excessive fatigue. King, the survivor of the Burke and Wills expedition, who had lived seven months with these natives when rescued by Howitt, states that when his food became so scarce and bad as barely to support life, he sometimes obtained a chew of pitchiri, which soon caused him to forget his hunger and the miseries of his position.\* It also plays an important part in the social rites of these natives. At their "big talks" and feasts the pitchiri "quid"—for I can find no more appropriate word for it—is ceremoniously passed from mouth to mouth, each member of the tribe having a chew, from the *pin'ar'oo*, or head man, downwards. This singular wassail cup never fails to promote mirth and good fellowship, or to loosen the tongues of the eloquent. I have not been able to ascertain if the excitement it produces can be pushed to actual intoxication, or whether natives suffer from its use. There is a curious mode of greeting on Cooper's Creek. When friends meet they salve with "*gaow, gaow*" ("peace, peace"), and forthwith exchange pitchiri "quids," which when well chewed are returned to their owner's ears! They extended this custom to us; but the fullest appreciation of their hospitality in offering their highly-prized and indeed only stimulant could never overcome our repugnance to the nauseous morsels hot and steaming from their mouths. I may add, they always accepted our want of politeness good-humouredly. The "quid" which I have spoken of, which is carried behind the ear, is composed of pure pitchiri, green leaves, and wood-ashes. The pure pitchiri I saw resembled unmanufactured tobacco of a very coarse kind, dried and pulverised. It had the same brownish colour; but

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\* See King's Narrative in the History of Burke and Wills' Expedition.

the stalks and midribs, which were strong, preponderated over the finer parts of the leaf. I could never obtain an unbroken leaf nor even a good piece of one as a specimen. It had no particular smell, but a most pungent taste, which to me appeared like tobacco, and chewing it promoted a copious flow of saliva. The natives take a good pinch of pitchiri, and knead it with green leaves, I think to increase the size of the masticatory and moderate its power. We know that the Malays add sirih-leaf (*Piper betel*) to their areca-nut, and lime to increase its stimulant properties; but I could never discover the use of any condiment in this way by the Cooper's Creek blacks, all non-poisonous leaves appearing to be used indifferently. By the addition of wood-ash to the masticatory, the alkaloid is slowly liberated, and thus the strength of the "bolus" gradually augmented by keeping, as noticed in the *Lancet's* annotation. Natives, on using our tobacco, call it "whitefellow pitchiri," and, conversely, some whites who smoked pitchiri pronounced it a good substitute for tobacco. From these confessedly rough and ready data I have always up till now regarded this substance as a variety of *Nicotiana*. Its toxic action and that of tobacco, to judge by the experiments of Dr. Baneroff, are singularly alike; for the successive stages of mild cerebral excitement, loss of inhibitory power, copious salivation and subsequent dryness of mouth, irregular muscular action, nausea, dilatation of pupil, languor, drowsiness, and paralysis of the respiratory functions of the medulla appear in both. But the experiments of Drs. Ringer and Murrell with alkaloid of pitchiri point to marked physiological differences between it and nicotia, more especially in the pupil indications. I must leave the discussion of these nice points to competent hands, as I aim no higher in this letter than to give a traveller's account of pitchiri.

Dr. Murray records the fact of using Pituri in lieu of Tobacco. Hodgkinson mentions the same in page 11 of my former paper. He says:—"Sixteen years ago, when with Burke and Wills' expedition, subsequently with Mr. Jno. McKinlay, and recently in the North-west Expedition, I used petcherie habitually, when procurable, in default of tobacco, and have very often chewed it both in its raw and prepared state." Thus, all evidence, practical and theoretical, goes to prove the identity of the two alkaloids Piturine and Nicotine; and it is a marvellous circumstance that the black man of Central Australia should have dropped upon the same narcotic principle as the red man of America in a plant differing so remarkably in external aspect. This discovery of the Australian aborigines should tell somewhat in their favour as clever men, against the oft-repeated assertion of ethnologists as to their low position among the human races. The aborigines value not the nick-nacks and contrivances of the white man, yet are very much amused when the utility of such tools is explained to them. The forest is the home of the native, and there the white man often feels his own inferiority. In the wilds of Australia the blackfellows' power of climbing easily, puts him in possession of a meal under circumstances in which a white man must starve. As a hunter the black man is perfection itself.



With regard to Tobaceo and Pituri, humanity at large has endorsed the conclusions arrived at by the uncivilised man. The first thing now offered by the European traveller to a newly-discovered savage race is tobacco. I was much struck with this Tobacco-want when passing through Torres Straits lately. Steaming slowly among the islands of that calm sea the vessel encountered a native and his wife in a bark canoe. The only word they used was "Tabac, tabac!" A loaf of bread was thrown to them, but this did not satisfy; and in the wake of the steamer there could still be heard the cry, "Tabac, tabac!"

Inhaling burning vegetable fumes is mentioned by Herodotus, Diosorides, and Pliny, for particulars of which consult Pereira's Elements of *Materia Medica* and references given; and Catlin, in his "North American Indians," p. 234, tells us:—"There are many weeds and leaves and barks of trees which are narcotics, and of spontaneous growth in their countries, which the Indians dry and pulverize and carry in pouches and smoke to great excess, and which in several languages, when thus prepared, is called 'K'nick-k'neck.' These are smoked in pipes made of red steatite, from the celebrated pipe-stone quarry. But the combustion of dried tobacco leaves, without doubt, originated in tropical America. "When Columbus and his followers arrived at Cuba in 1492 they for the first time beheld the custom of smoking cigars"—see Pereira; and, according to Loudon, "Sir Walter Raleigh first introduced smoking; in the house in which he lived at Islington are his arms on a shield, with a tobacco-plant on the top." The universal use of Tobacco in Asia has led some moderns to think the practice must have been an old custom. But the following from an Indian work in the library of the Royal Asiatic Society at Bombay seemed so conclusive that I copied it in my note-book:—

Punjab products, vol. 1. Baden H. Powell, Roorkee, 1868, p. 288.  
Tobacco—Tamákú. First known in 1492 by Columbus and his followers.

The universal practice of smoking in the East is very remarkable, but it has been introduced: not only is there no indigenous wild species of tobacco in Asia, but there is evidence to show that it was not introduced before the 17th century. Lane says that tobacco was introduced into Turkey and Egypt in the 17th century, and to Java in 1601.

It would seem from the remarkable facts about Tobacco and Pituri that some important cravings of human nature are satisfied by the narcotic principle; and though Burns says of alcohol—

Inspiring bold Sir Barleycorn!  
What dangers thou canst make us scorn!  
Wi' tippenny, we fear nae evil;  
Wi' usquabae we'll face the devil!

yet there is no narcotic in the world the use of which has been so satisfactory to humanity as Tobacco.



For all this, nicotine has scarcely been used in medical practice; its medicinal dose is not even determined. Infusion of Tobacco 20 grs. to 8 ozs., in the form of an enema to relieve strangulated hernia, is mentioned in the British Pharmacopœia. Tobacco is spoken of unfavourably in medical writings; and, though its action is very like that of *Digitalis*, it is dismissed in two pages of Dr. Ringer's book on therapeutics, whereas thirty pages are devoted to the history of the use of *Digitalis*. Professor Haughton, quoted by Waring in his work on therapeutics, advises the employment of nicotine in preference to the use of crude Tobacco infusion, and his suggestion is well worth the attention of experimentalists.

The study of the peculiar retraction of the eye of dogs suffering from nicotine may tend to elucidate the nature of the amaurotic blindness that happens to some smokers. Children suffer in health from tobacco-smoking to a greater extent than adults whose organs are more firmly developed.

Gilmour, now dead, told me that the aborigines at Kulloo, Eyre's Creek, who use Pituri, keep it entirely from the younger members of the tribe. Are these poor Australians not, then, on a parity in intelligence with the latest of our anti-tobacco societies who are recommending legislation against youthful smokers? Tobacco has a well-marked soothing effect sufficiently evident in its operation on others. I do not speak from personal experience, as I neither smoke nor enjoy the fumes of Tobacco. If one could believe Hood's poetry on "my Cigar," the use of it becomes intelligible to non-smokers. A few days ago I was called to tie the radial artery of a young fellow on board a steamer just arrived in the river, and from his bloodless and exhausted condition it was not prudent to give him chloroform. The patient was enduring much pain from multiplied bandages put on to control the bleeding. "If you will only allow me to smoke," he said, "I will bear the pain of the operation." He accordingly had his pipe filled and lighted, and he submitted to the operation with as much quietude as if chloroform had been administered. Powdered Pituri acts powerfully like snuff; one finds this out in handling that prepared by the natives, much of which is comminuted and dusty.

The narcotic *Solanaceæ* and *Scrophulariaceæ*, widely scattered over Australia, are objects of much interest, and I have to request the Queensland Philosophical Society to aid me in endeavouring to obtain them for examination. *Duboisia Hopwoodii* should be known by the aboriginal title; I propose, therefore, to name it *Duboisia Pituri*.

Another suspected *Duboisia* is called *Anthocercis Leichhardtii*; but to its habitat there is no clue. The corolla lobes are said to be more acute than those of *D. myoporoides*, but the foliage

is similar. *D. myoporoides* is a common plant in the neighbourhood of Brisbane. All the species of the genus *Anthocercis* are interesting; the plate herewith will enable observers to find them. I have completed my examination of two only—*A. Tasmanica*, sent me by F. O. Cotton, Esq., of Kolvedon, Tasmania, and *A. viscosa*, obtained from Dr. Schomburgk, of the Adelaide Botanic Garden. Baron F. von Mueller has given me all he can spare from his herbarium of the other species, but the quantities are insufficient for complete physiological experiments. I should therefore be pleased to obtain about an ounce or more of the dried plant of all the species except the two mentioned as examined, also ripe seeds of all the species. It would be interesting to find some with the properties of Pituri; so far as examined, all appear to have an action like that of *Duboisia myoporoides*. Persons searching for Pituri should take particular notice of the plate and the following description:—

The Pituri grows about fifty miles east and west of the 138° meridian, the boundary between Queensland and South Australian territory, and from 22° to 25° south latitude. It is a shrub or small tree about 8 feet high, with a stem at the thickest part at times as much as 6 inches in diameter. Wood light, close-grained, lemon-coloured, with a smell of vanilla when newly cut. Suckers spring up around the tree from long rough roots spreading near the surface. Leaves 3 to 3½ inches long, pointed at both ends, ¼ inch wide, midrib distinct, margin slightly recurved. Flower a funnel-shaped tube from ¼ to ⅔ of an inch long with five bluntish divisions spreading to about ¼ inch across. Three reddish lines run from each division down the throat of the flower, making altogether fifteen stripes. There are no hairs in the flower as in the genus *Myoporum*, which latter may be known by having four or five stamens of equal length. The pistil of the Pituri extends to the length of the two longer stamens. Stamens four, two long and two short anthers yellow kidney-shaped, filament attached to the concave side, the anther bursting along the convex margin; best seen by examining a flower that is just at the point of opening. Fruit a green berry resting in the minute calyx. As it ripens it changes to black, and contains dark-brown kidney-shaped seeds covered with minute pits recognisable by the aid of a pocket lens. Ripe berries soon fall off, and should be looked for under the tree, as those gathered from the branches are not mature enough to germinate.

Plants of the genus *Anthocercis* may be known by the corolla lobes spreading out in a radiate manner, the word "*anthocercis*" meaning wheel-flower. The stripes running into the tube of the corolla are similar to the flower of Pituri described; the stamens also are four, two longer than other two; the lobes of the outer cup calyx are much sharper and prolonged. The fruit is a

capsule opening by two valves, with two teeth on each; seeds, more or less kidney-shaped and pitted. Herbs, shrubs, and small trees; there are eighteen known species, which are described in the "*Flora Australiensis*;" it is also desirable to examine for poisonous properties the two plants of the genus *Anthotroche*—one *Lycium* and the varieties of *Nicotiana suaveolens*, called native tobacco.

It might be asked whether any interesting alkaloid exists in the genus *Solanum*, of which fifty species are described in the "*Flora*" as natives of Australia. In reply I can say that some of them have been tested in various ways and found poisonous. They have no immediate effect on the eye, nor do they produce the tetanic fits of Pituri, but a dangerous torpor with very feeble circulation and respiration. My experiments on this genus as yet are very incomplete and afford no reliable data.

Pituri seeds are very likely to perish by much drying. Collectors should forward them as early as possible by post.

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Distribution of Anthoeroces and Duboisia.		West Australia.	South Australia.	Victoria.	N. S. Wales.	Queensland.	Tasmania.	New Caledonia.
A. viscoea, oo	...	King George's Sound						
A. littoralis, oo	...	King George's Sound and Swan River						
var. ilicifolia	...	do.						
" glabella	...	do.						
A. gracilis, oo	...	Murchison River						
A. genistoides, oo	...	do.						
A. arborea, oo	...	do.						
A. intricata, oo	...	do.						
A. racemosa, o	...	Phillips River						
A. fasciculata, oo	...	Salt River						
A. microphylla, o	...	West Australia	Boston Island and Lake Gillies					
A. anisantha, oo	...		Torrens River	Grampians, &c.				
A. angustifolia, o	...	...	Murray River,	do.				
A. myosotidea, o...	...	...	Tattara Creek	...	near Camden Darling River (rare)	Western boundary		
A. Eadesii, o	...	West Australia, with smaller flowers	Queensland border	...				
D. Hopwoodii—Pituri, o	...							
A. scabrella, o	...	...	...	...	Nepcan River			
A. albicaus, o	...	...	...	...	Bathurst, Cassilis			
A. var. tomentosa	...	...	...	...	Peel's Rango			
A. or D. Leichhardtii, o	...	...	...	...	...	Queensland Coast country		
D. myoporoides, o	...	...	...	...	Port Jackson			
A. Tasmanica, o	...	...	...	...	...	...	Kelvedon	New Caledonia
22 Species and Varieties	...	13	5	2	6	1	1	

o Species with single anthers.      oo Species with double anthers.

## EXPLANATION OF PLATES.

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### PLATE 1—THE PITURI PLANT :—

Flower cut open, natural size.

Enlarged appearance of stamens and pistil. Drawn by Dr. Bancroft  
from specimens supplied by Sylvester Brown, Esquire.

### PLATE 2 :—

1. Enlarged flower of *Anthoecereis Tasmanica*.
2. Ditto                      ditto                      ditto.
3. Ditto                      ditto                      ditto, open.
4. Enlarged stamen showing the anther bursting.
5. Ditto                      ditto                      ditto.
6. Enlarged pistil and germe.
7. Magnified hairs that cover the same plant.  
(1 to 7 copied from Hooker's Flora of Tasmania.)
8. The Natives' Pituri bag, showing the broken-up state of the  
prepared Pituri leaf, falling out ; the loop of string for carrying  
the bag over the shoulder. The bag is made of fibre in the form  
of a circular mat, which is then folded and sewn up at the  
circumference, leaving an opening near one end about two inches  
long, which is sewn and unsewn as required.
9. *Anthoecereis ilicifolia*, after Loudon.
10. *Anthoecereis viseosa*,                      ditto.  
(Plate 2 drawn by Mr. Barton.)





